

# TOMBSTONE MUNICIPAL AIRPORT

**Tombstone, Arizona**

## AIRPORT MASTER PLAN - 1999

### 6. AIRPORT LAYOUT & DEVELOPMENT PHASING PLAN

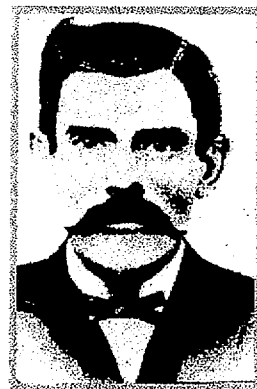
#### PREPARATION OF THE AIRPORT LAYOUT PLAN (ALP)

The Airport Layout Plan (ALP) is a set of scaled drawings that depict the existing and ultimate proposed airport land and facilities.

All airport development carried out at Federally obligated airports (generally those which have received federal funding assistance grants within the past twenty years) must be done in accordance with an FAA-approved ALP.

A typical ALP drawing set consists of the following elements:

- ▶ the Title Sheet, including location and vicinity maps, the airport wind rose and wind data summary, standard Airport Data table, and approval blocks.
- ▶ the Airport Layout Drawing, which consists of a graphic depiction of the entire airport illustrating both the existing and ultimate development features.
- ▶ the Terminal Area Layout(s), which is a larger scale detail of the airport's terminal area.
- ▶ the Runway RPZ Area Plan & Profile sheets, consisting of detail drawings of the each runway, extended to show the inner approach surfaces of each existing and ultimate runway end. The runways and approaches are depicted in both plan and profile, and any existing or ultimate obstructions to FAR Part 77 airspace are indicated.
- ▶ the Airport Airspace Drawing(s), which depicts all of the airport's ultimate FAR Part 77



*Doc Holiday (c1885)*

## Section 6: Airport Layout & Development Phasing Plan

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"imaginary surfaces". Any existing or ultimate obstructions are indicated.

- ▶ the Airport Property Map (or "Land Inventory Map"), which depicts the existing airport property along with any planned ultimate land acquisitions.
- ▶ the Airport Land Use Drawing, consisting of a map showing the land uses and/or zoning in the area within the airport's traffic pattern area. Existing and recommended ultimate land uses are shown.

The Airport Layout Plan set prepared for the Tombstone Municipal Airport includes all of the above listed elements. The Airport Property Map also includes specific horizontal and vertical control for the airport property and runway geometry.

The ALP was prepared based on the selected development alternate, Alternate 5. Major ultimate improvements include extension of the primary runway (6-24) from 4,600' to 6,100', and development of a secondary 4,900' long graded crosswind runway (2-20).

The Airport Layout Plan set (8 sheets) is included at the end of this section in reduced format. The full size (24" x 36") FAA-approved drawings are considered the official ALP, and a part of this Master Plan document.

### DEVIATIONS FROM FAA STANDARDS

For federally funded airports, all existing facilities as well as improvements shown on the ALP must conform to the FAA design standards that existed at the time of plan approval, unless specific waivers are granted.

There are currently no deviations from FAA standards evident in the existing airport facilities, with the exception of the penetration of the required 15' vehicular clearance between the surface of Highway 80 and the 20:1 approach surface to Runway 6 (see Sheet 5 of the Airport Layout Plan). An FAA "determination of no hazard" waiver has been requested, and it is recommended that the highway clearance be appropriately marked for night operations.

There are no proposed facilities which will not conform with current FAA design criteria.

## Section 6: Airport Layout & Development Phasing Plan

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### DEVELOPMENT PHASING PLAN

A general schedule of recommended improvements was presented in Section 3: Airport Facility Requirements. This general development program was broken down into three general development phases, as follows:

- ▶ General Immediate Term Development Plan (1999-2000)
- ▶ General Short-Term Development Plan (2001-2005)
- ▶ General Ultimate Term Development Plan (2006-2020)

In this section, these three general development phases have been further broken down into several projects. The Immediate and Short Term programs include projects broken down by year of development. The General Ultimate Term has been subdivided into Intermediate Term (2006-2010) and Long Term (2011-2020) programs.

The recommended detailed development program is described on the following pages.

Estimated costs for the recommended development are presented in Section 7: Financial Plan.

## Section 6: Airport Layout & Development Phasing Plan

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Immediate Term  
Development Plan  
1999-2000

1999 . . . . Extend electrical and telephone service from the City limits to the airport property.

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Prepare architectural and engineering construction plans and specifications for a secured aircraft storage hangar building with graded access taxiways, and security fencing of the terminal area.

Construct secured aircraft storage hangar building with graded access taxiways.

Construct security fencing of the terminal area.

Provide engineering services during construction.

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Prepare engineering plans and provide survey services for Year 2000 project (paving and marking of Runway 6-24 (4,600' x 60'), acquisition of Runway Protection Zones in fee, marking of Highway 80 vehicular clearance obstructions, taxiway shoulder work and marking, and apron crack sealing and marking).

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2000 . . . . Acquire Runway Protection Zone land in fee.

Pave and mark Runway 6-24 (4,600' x 60').

Clear taxiway shoulders and apply herbicide.

Apply center line markings and hold line to existing taxiway pavement.

Apply crack sealing to existing parking apron.

Apply center line and tiedown markings to existing apron pavement.

Provide engineering services during construction.

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## Section 6: Airport Layout & Development Phasing Plan

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Short Term  
Development Plan  
2001-2005

2001 . . . . Prepare engineering construction plans and specifications for hangar and fuel area site grading, and for paved access road and auto parking area.

Construct graded hangar development area for private hangar development, with graded access taxiways.

Construct new 24' wide paved access road and paved auto parking area for 7 cars.

Provide engineering services during construction.

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Prepare engineering construction plans and specifications for installation of Medium Intensity Runway Lighting (MIRL), Medium Intensity Taxiway Lighting (MITL), parking apron floodlighting, wind cone lighting, a new segmented circle, and installation of a new rotating beacon.

Install MIRL and MITL system with pilot-actuated radio control (Runway 6-24 and existing taxiways).

Install parking apron security floodlighting.

Install new rotating beacon.

Light the existing wind cone and construct a new segmented circle (remove the existing secondary wind cone adjacent to the apron).

Provide engineering services during construction.

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2002 . . . . Prepare architectural and engineering construction plans and specifications for a 250 square foot Terminal Building, onsite potable water system and a sanitary sewage disposal system.

Construct the potable water system and sanitary sewer disposal system.

Construct the Terminal Building (may be located within or as an addition to the secured aircraft storage hangar).

Provide engineering services during construction.

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## Section 6: Airport Layout & Development Phasing Plan

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Prepare engineering plans for site grading and development of an airport campground with restroom facilities.

Construct the campground and restroom facilities.

Provide engineering services during construction.

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2003 . . . . Prepare engineering construction plans and specifications for application of pavement preservative seal coating and marking of the taxiway and apron pavements.

Apply pavement preservative seal coat to the taxiway and apron pavements.

Apply center line markings and hold line to existing taxiway pavement.

Apply center line and tiedown markings to existing apron pavement.

Provide engineering services during construction.

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2004 . . . . Prepare engineering construction plans and specifications for installation of Precision Approach Path Indicators (PAPI) at Runway 6 and 24 approach ends.

Install Precision Approach Path Indicators (PAPI) at Runway 6 and 24 approach ends.

Provide engineering services during construction.

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2005 . . . . Prepare engineering construction plans and specifications for rehabilitation of the existing barbed wire property line fencing.

Provide engineering services during construction.

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## Section 6: Airport Layout & Development Phasing Plan

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Intermediate Term  
Development Plan  
2006-2010

2006 thru  
2010 . . . .

Prepare construction plans and specifications for widening of Runway 6-24, relocation of the existing apron access taxiway, and construction of MITL-lighted "jug handle" turnarounds at each runway end.

Widen Runway 6-24 (4,600' long) from 60' to 75' pavement width.

Construct MITL-lighted "jug handle" turnarounds at each runway end.

Relocate apron access taxiway.

Provide engineering services during construction.

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Prepare Environmental Assessment (EA) for the proposed extension of Runway 6-24.

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Prepare construction plans and specifications for acquisition of land in fee for runway extension, property line fencing, extension of Runway 6-24, relocation of PAPI, extension of MIRL lighting, and construction of MITL-lighted "jug handle" turnaround at the new runway end.

Acquire land in fee for runway extension.

Extend property line fencing to encompass the new land acquisitions.

Construct 1,500' x 75' paved extension of Runway 6-24.

Extend existing MIRL system and relocate threshold lights.

Relocate existing PAPI system.

Construct new MITL-lighted "jug handle" turnaround.

Provide engineering services during construction.

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## Section 6: Airport Layout & Development Phasing Plan

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Prepare construction plans and specifications for a new aircraft parking apron.

Construct new aircraft parking apron.

Provide engineering services during construction.

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Long Term  
Development Plan  
2011-2020

2011 thru  
2020 . . . .

Prepare Environmental Assessment (EA) for the proposed new crosswind Runway 2-20.

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Prepare construction plans and specifications for additional land acquisition, and for construction of a new 4,900' x 120' graded crosswind Runway 2-20.

Acquire land in fee for Runway 2-20 construction.

Construct new 4,900' x 120' graded crosswind Runway 2-20.

Provide engineering services during construction.

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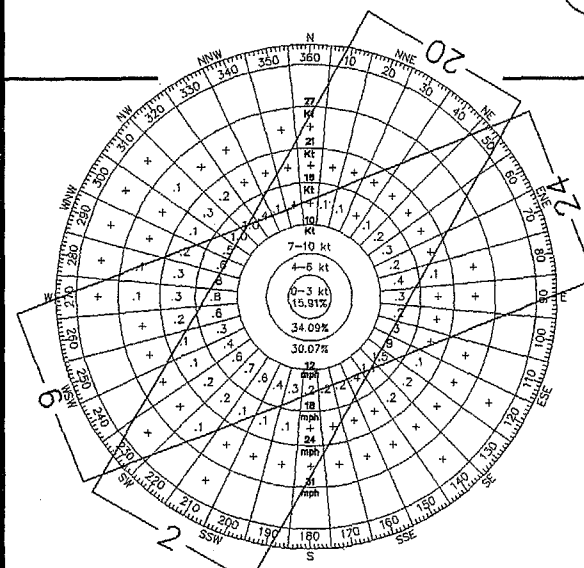
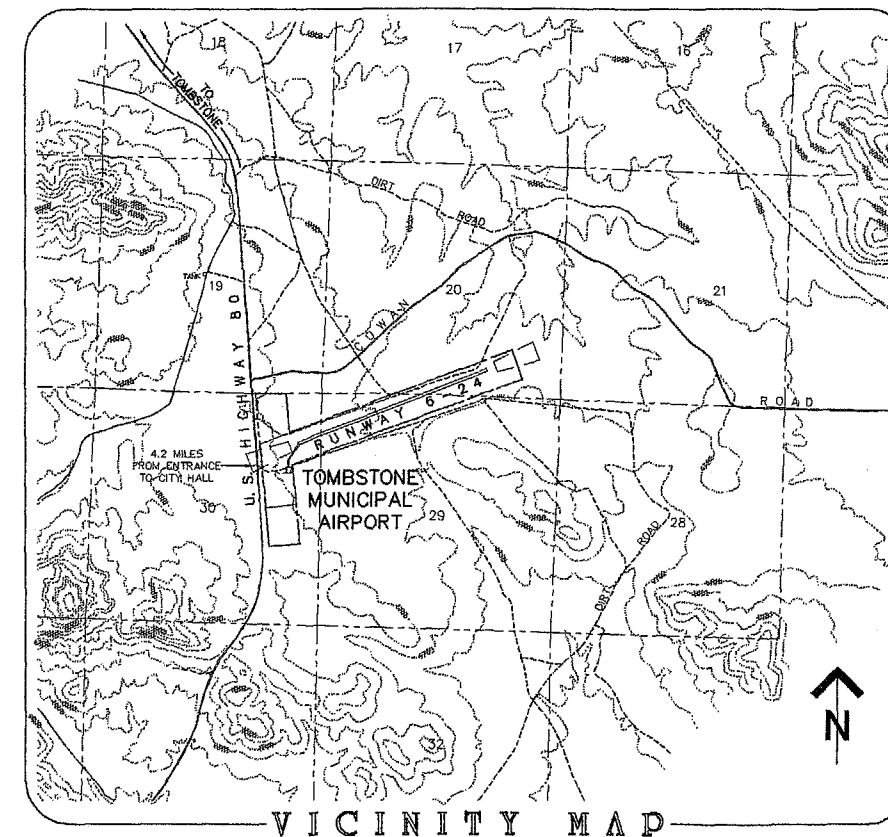
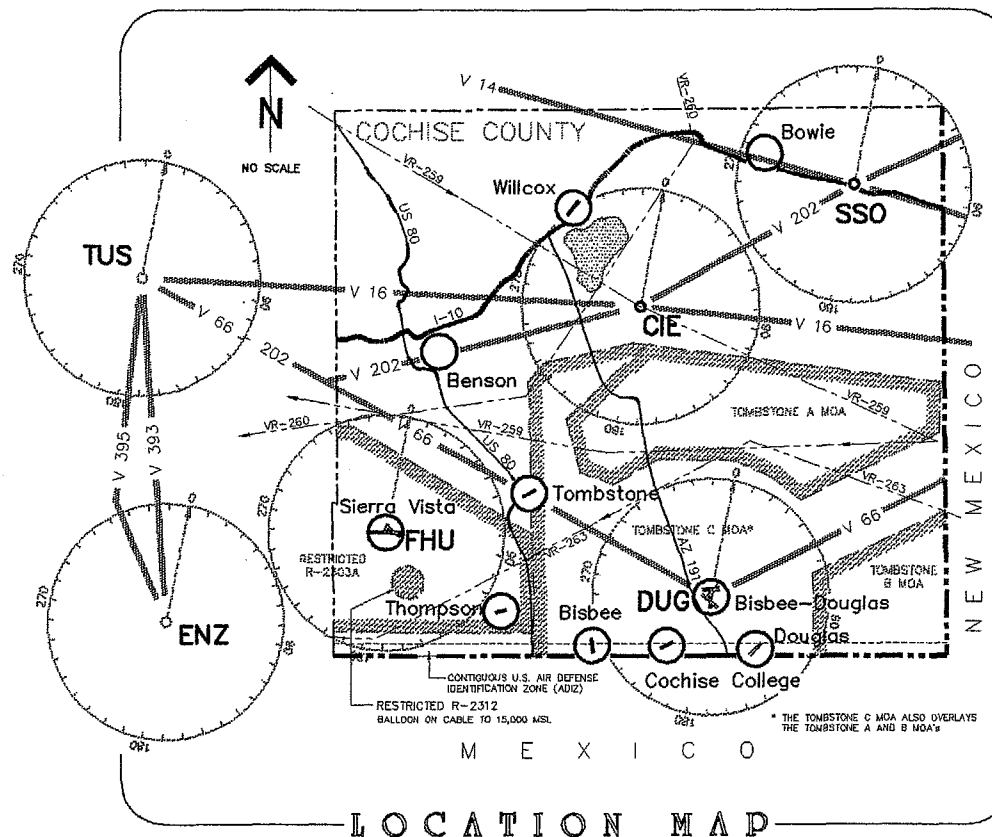


# AIRPORT LAYOUT PLAN

## TOMBSTONE

### MUNICIPAL AIRPORT

### TOMBSTONE, ARIZONA



WIND COVERAGE						
	ANNUAL 10.6 KNOT (12 mph) ALL WINDS	ANNUAL 10.5 KNOT (12 mph) HIGH WINDS	ANNUAL 13 KNOT (15 mph) ALL WINDS	ANNUAL 13 KNOT (15 mph) HIGH WINDS	ANNUAL 16 KNOT (18 mph) ALL WINDS	ANNUAL 16 KNOT (18 mph) HIGH WINDS
RUNWAY 6-24	90.79%	42.47%	95.19%	53.54%	98.69%	68.82%
RUNWAY 2-20	87.40%	27.35%	92.30%	32.42%	97.53%	44.69%
RUNWAY 6-24 AND 2-20	92.70%	54.80%	96.49%	82.46%	99.04%	75.51%
-- SOURCE -- KENDALL WATERSHED HYDROLOGIC FIELD SITE ( 5 MILES NW OF TOMBSTONE MUNICIPAL AIRPORT ) RECORD DATA FOR AUGUST 15, 1990 - DECEMBER 31, 1995 * THE "HIGH WIND" ANALYSIS CONSIDERS ONLY WIND CONDITIONS OF >16 KNOTS (18 mph).						
7						
6						
5						
4						
3						
2						
1						
No.	BY	DATE	CHANGE			
REVISIONS						

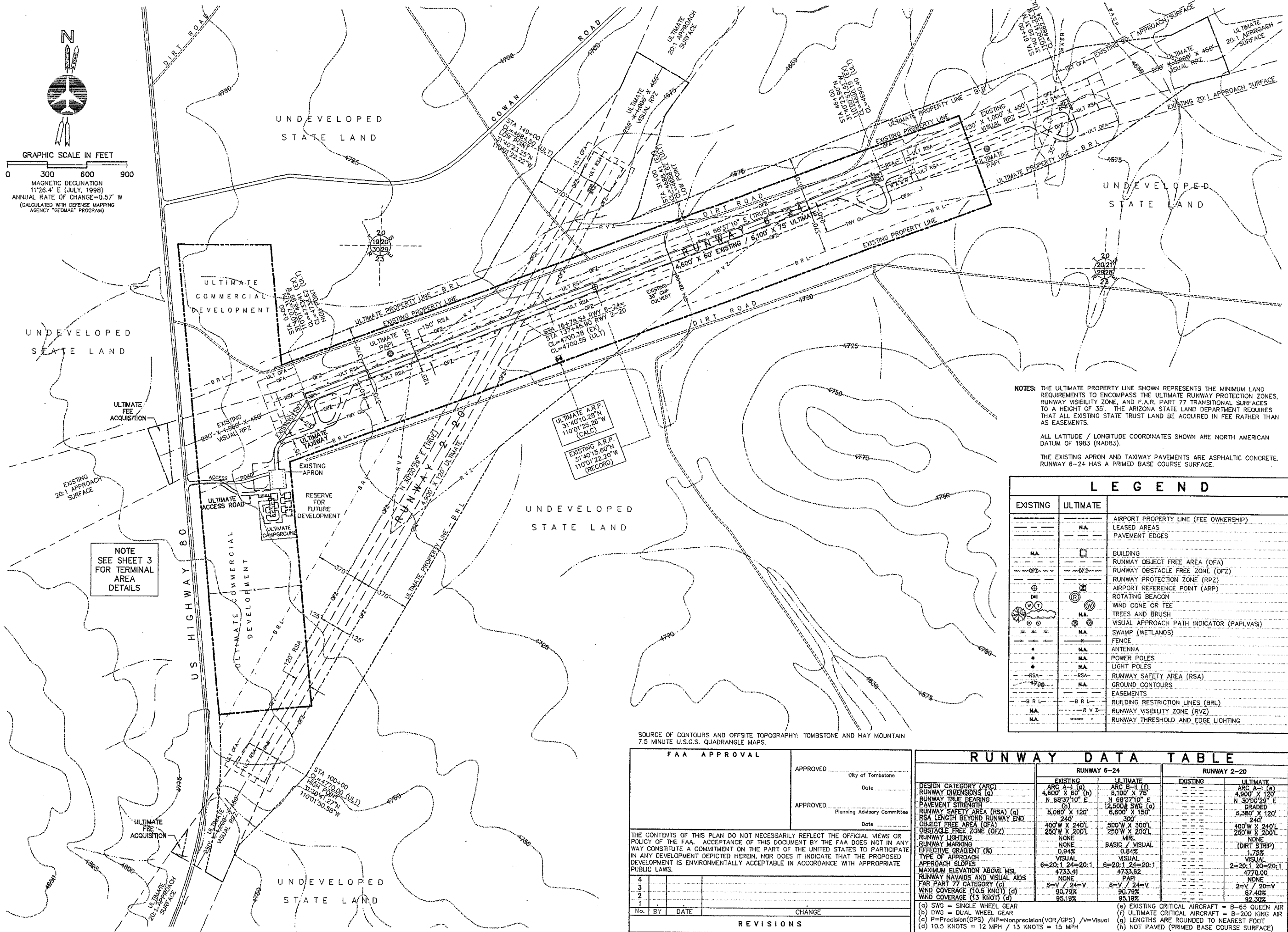
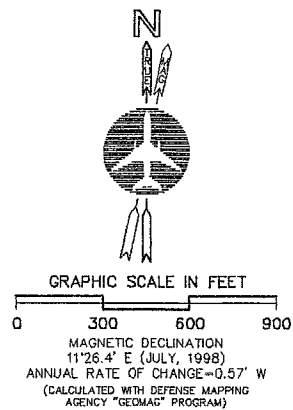
AIRPORT DATA			
AIRPORT ELEVATION ABOVE MSL		EXISTING	ULTIMATE
AIRPORT REFERENCE POINT (NAD 83)		4733.41	4770.00
LATITUDE		31°40'15.60" N	31°40'10.28" N
LONGITUDE		110°01'22.20" W	110°01'25.28" W
AIRPORT AND TERMINAL NAV AIDS		NONE	BEACON
AIRPORT VISUAL AIDS		NONE	PAPI (RWY 6-24)
MEAN MAX. TEMP. OF HOTTEST MONTH		94.7° JUNE	94.7° JUNE
AIRPORT REFERENCE CODE (ARC)		ARC A-I	ARC B-II
GPS APPROACH		NO	NO
DESIGN AIRCRAFT		BE65 QUEEN AIR	BE200 KING AIR
RUNWAY END COORDINATES (NAD 83)			
EXISTING		ULTIMATE	
RUNWAY 6 - END OF PAVEMENT	LATITUDE	31°40'07.31" N	31°40'07.31" N
RUNWAY 24 - END OF PAVEMENT	LONGITUDE	110°01'46.99" W	110°01'46.99" W
RUNWAY 2 - END OF PAVEMENT	LATITUDE	31°40'23.90" N	31°40'23.90" N
RUNWAY 20 - END OF PAVEMENT	LONGITUDE	110°00'57.41" W	110°00'57.41" W
RUNWAY 6 - END OF PAVEMENT	LATITUDE	31°40'07.31" N	31°40'07.31" N
RUNWAY 24 - END OF PAVEMENT	LONGITUDE	110°01'46.99" W	110°01'46.99" W
RUNWAY 2 - END OF PAVEMENT	LATITUDE	31°40'23.90" N	31°40'23.90" N
RUNWAY 20 - END OF PAVEMENT	LONGITUDE	110°00'57.41" W	110°00'57.41" W
(1) SOURCE: FAA ON-LINE NAVIGATION DATABASE			
(2) SOURCE: CALCULATED FROM (1)			

SUBMITTED: *Nicholas J. Pella*  
 Date: 09/01/99  
 APPROVED: \_\_\_\_\_  
 City of Tombstone

SUBMITTED: *Ronald D. Schreier, P.E.*  
 Date: 09/01/99  
 APPROVED: \_\_\_\_\_  
 Planning Advisory Committee

Prepared by:  
**NICHOLAS J. PELLA and ASSOCIATES**  
 AVIATION PLANNERS  
 and  
**Gannett Fleming**  
 ENGINEERS AND PLANNERS

DATE OF DRAWING: SEPTEMBER 1, 1999 **SHEET 1 OF 8**



NOTES: THE ULTIMATE PROPERTY LINE SHOWN REPRESENTS THE MINIMUM LAND REQUIREMENTS TO ENCOMPASS THE ULTIMATE RUNWAY PROTECTION ZONES, RUNWAY VISIBILITY ZONE, AND F.A.R. PART 77 TRANSITIONAL SURFACES TO A HEIGHT OF 35'. THE ARIZONA STATE LAND DEPARTMENT REQUIRES THAT ALL EXISTING STATE TRUST LAND BE ACQUIRED IN FEE RATHER THAN AS EASEMENTS.

ALL LATITUDE / LONGITUDE COORDINATES SHOWN ARE NORTH AMERICAN DATUM OF 1983 (NAD83).

THE EXISTING APRON AND TAXIWAY PAVEMENTS ARE ASPHALTIC CONCRETE. RUNWAY 6-24 HAS A PRIMED BASE COURSE SURFACE.

LEGEND		
EXISTING	ULTIMATE	
---	---	AIRPORT PROPERTY LINE (FEE OWNERSHIP)
---	---	LEASED AREAS
---	---	PAVEMENT EDGES
---	---	BUILDING
---	---	RUNWAY OBJECT FREE AREA (OFA)
---	---	RUNWAY OBSTACLE FREE ZONE (OFZ)
---	---	RUNWAY PROTECTION ZONE (RPZ)
---	---	AIRPORT REFERENCE POINT (ARP)
---	---	ROTATING BEACON
---	---	WIND CONE OR TEE
---	---	TREES AND BRUSH
---	---	VISUAL APPROACH PATH INDICATOR (PAPI, VASI)
---	---	SWAMP (WETLANDS)
---	---	FENCE
---	---	ANTENNA
---	---	POWER POLES
---	---	LIGHT POLES
---	---	RUNWAY SAFETY AREA (RSA)
---	---	GROUND CONTOURS
---	---	EASEMENTS
---	---	BUILDING RESTRICTION LINES (BRL)
---	---	RUNWAY VISIBILITY ZONE (RVZ)
---	---	RUNWAY THRESHOLD AND EDGE LIGHTING

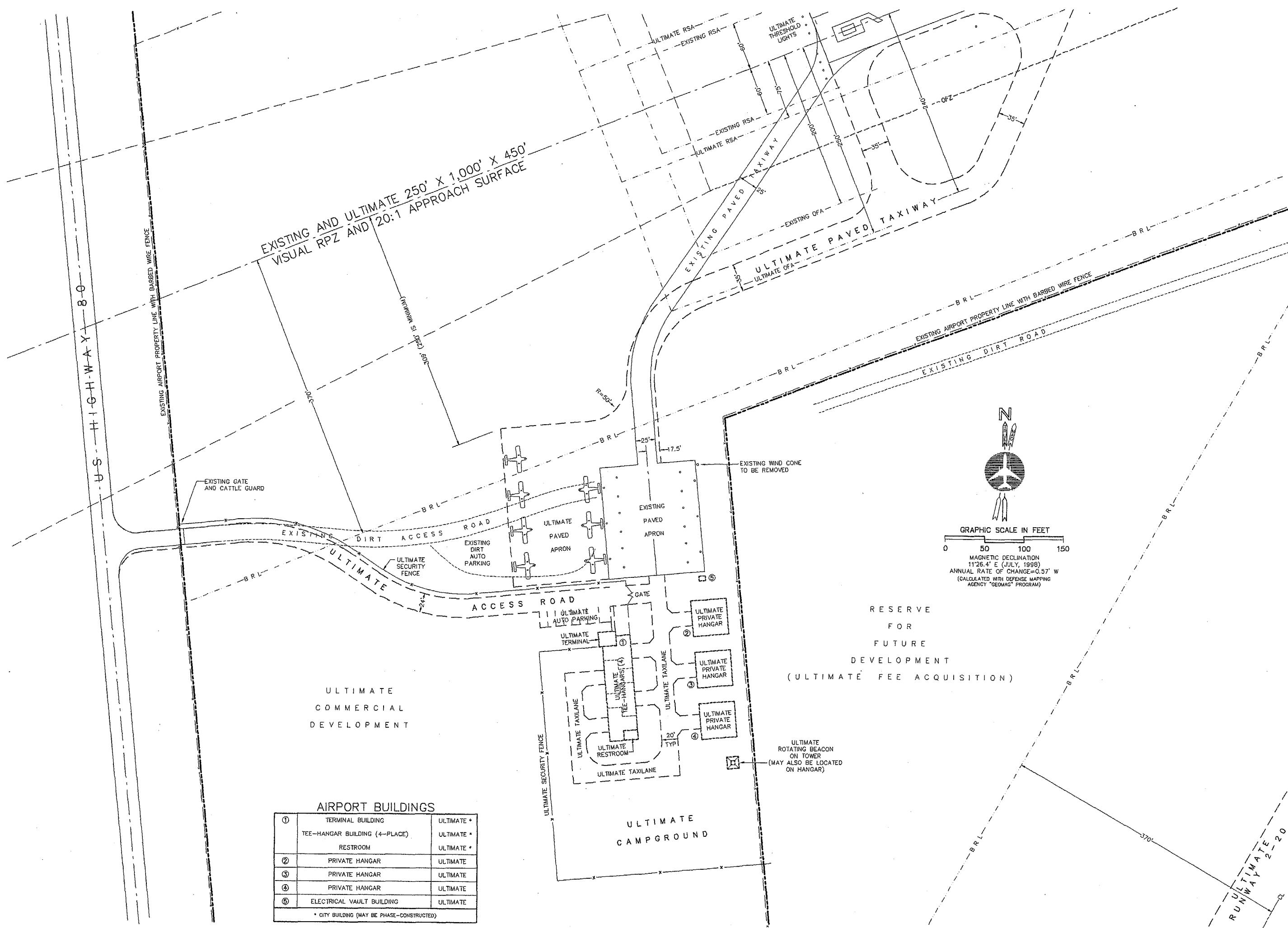
SOURCE OF CONTOURS AND OFFSITE TOPOGRAPHY: TOMBSTONE AND HAY MOUNTAIN 7.5 MINUTE U.S.G.S. QUADRANGLE MAPS.

FAA APPROVAL	
APPROVED	City of Tombstone
Date	
APPROVED	Planning Advisory Committee
Date	
THE CONTENTS OF THIS PLAN DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THIS DOCUMENT BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN, NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.	
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3	
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1	
No.	BY DATE CHANGE
REVISIONS	

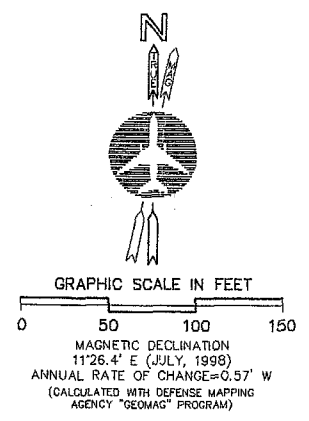
RUNWAY DATA TABLE			
	RUNWAY 6-24		RUNWAY 2-20
	EXISTING	ULTIMATE	EXISTING
DESIGN CATEGORY (ARC)	ARC A-1 (g)	ARC B-1 (f)	ARC A-1 (g)
RUNWAY DIMENSIONS (g)	4,600' X 60' (h)	5,100' X 75' (h)	4,900' X 200'
RUNWAY TRUE BEARING	N 68°37'10" E	N 68°37'10" E	N 30°00'29" E
PAVEMENT STRENGTH	(f)	12,500# SWG (g)	GRADED
RUNWAY SAFETY AREA (RSA) (g)	5,080' X 120'	6,600' X 150'	5,380' X 120'
RSA LENGTH BEYOND RUNWAY END	240'	300'	240'
OBJECT FREE AREA (OFA)	400'W X 240'L	500'W X 300'L	400'W X 240'L
OBSTACLE FREE ZONE (OFZ)	250'W X 200'L	250'W X 200'L	250'W X 200'L
RUNWAY LIGHTING	NONE	MIRL	NONE
RUNWAY MARKING	NONE	BASIC / VISUAL	(DIRT STRIP)
EFFECTIVE GRADIENT (%)	0.94%	0.84%	1.75%
TYPE OF APPROACH	VISUAL	VISUAL	VISUAL
APPROACH SLOPES	6=20:1 24=20:1	6=20:1 24=20:1	2=20:1 20=20:1
MAXIMUM ELEVATION ABOVE MSL	4733.41	4733.82	4770.00
RUNWAY NAVIGATIONAL AIDS	NONE	PAPI	NONE
FAR PART 77 CATEGORY (g)	5=V / 24=V	5=V / 24=V	2=V / 20=V
WIND COVERAGE (10.5 KNOT) (j)	90.79%	90.79%	92.30%
WIND COVERAGE (13 KNOT) (j)	95.19%	95.19%	97.40%

(g) SWG = SINGLE WHEEL GEAR  
(h) DWG = DUAL WHEEL GEAR  
(i) P=Precision(GPS) / NP=Nonprecision(VOR/GPS) / V=Visual  
(j) 10.5 KNOTS = 12 MPH / 13 KNOTS = 15 MPH

(e) EXISTING CRITICAL AIRCRAFT = B-65 QUEEN AIR  
(f) ULTIMATE CRITICAL AIRCRAFT = B-200 KING AIR  
(g) LENGTHS ARE ROUNDED TO NEAREST FOOT  
(h) NOT PAVED (PRIMED BASE COURSE SURFACE)

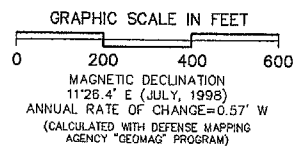
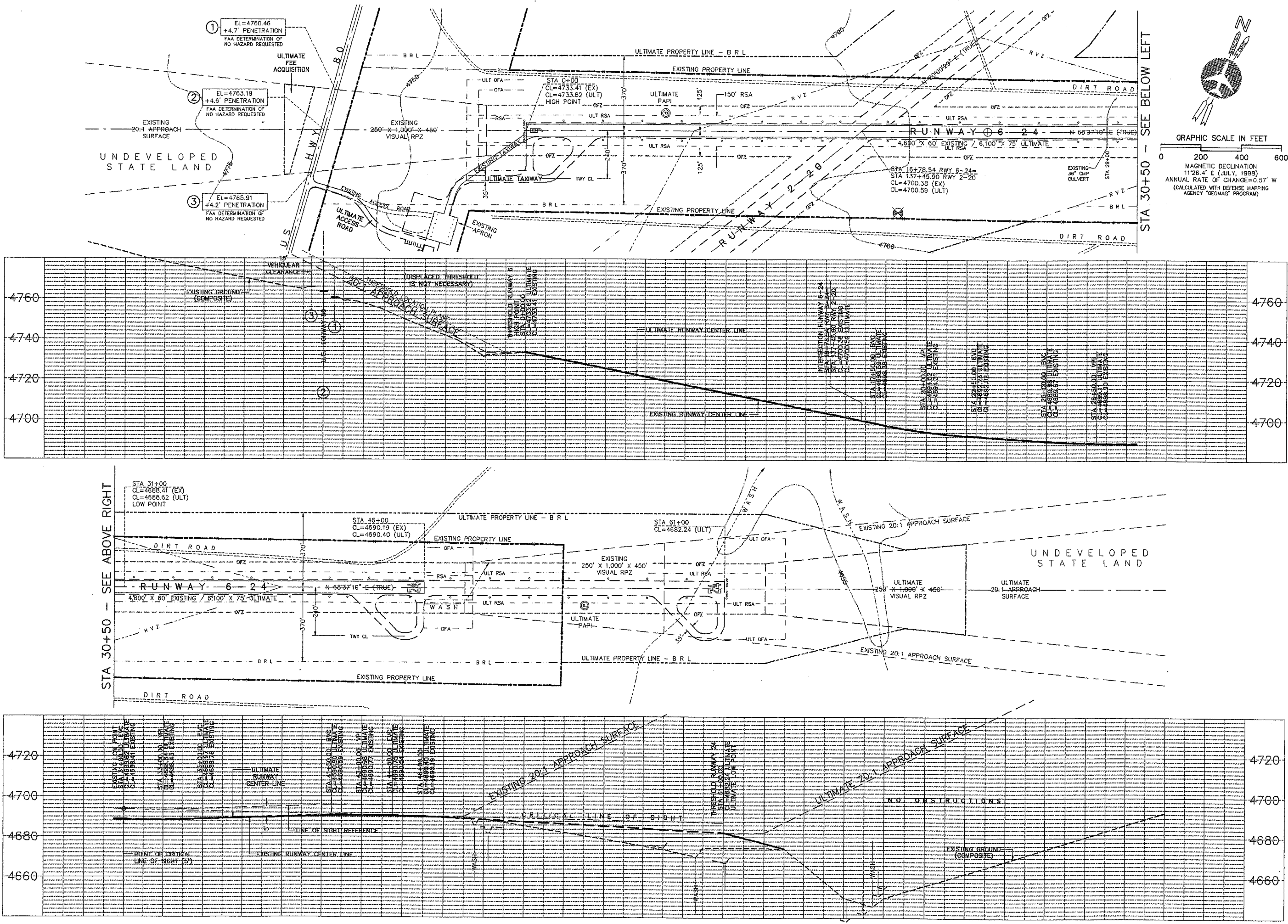


AIRPORT BUILDINGS		
①	TERMINAL BUILDING	ULTIMATE *
	TEE-HANGAR BUILDING (4-PLACE)	ULTIMATE *
	RESTROOM	ULTIMATE *
②	PRIVATE HANGAR	ULTIMATE
③	PRIVATE HANGAR	ULTIMATE
④	PRIVATE HANGAR	ULTIMATE
⑤	ELECTRICAL VAULT BUILDING	ULTIMATE
* CITY BUILDING (MAY BE PHASE-CONSTRUCTED)		

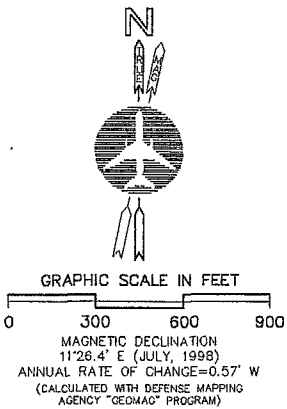




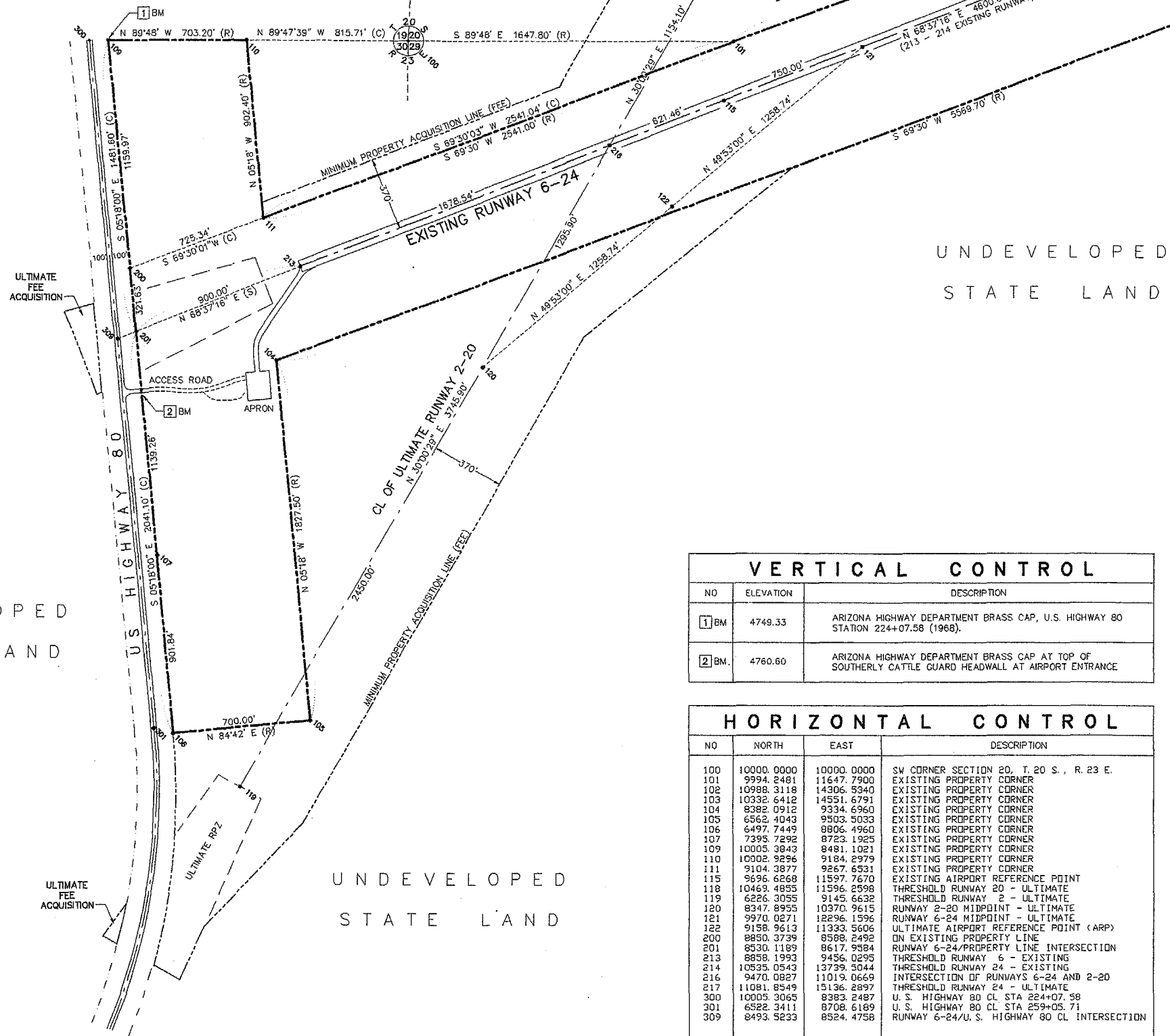








UNDEVELOPED  
STATE LAND



VERTICAL CONTROL		
NO	ELEVATION	DESCRIPTION
1 BM	4749.33	ARIZONA HIGHWAY DEPARTMENT BRASS CAP, U.S. HIGHWAY 80 STATION 224+07.58 (1968).
2 BM	4760.60	ARIZONA HIGHWAY DEPARTMENT BRASS CAP AT TOP OF SOUTHERLY CATTLE GUARD HEADWALL AT AIRPORT ENTRANCE

HORIZONTAL CONTROL			
NO	NORTH	EAST	DESCRIPTION
100	10000.0000	10000.0000	SW CORNER SECTION 20, T. 20 S., R. 23 E.
101	9994.2481	11647.7900	EXISTING PROPERTY CORNER
102	10988.3118	14306.5340	EXISTING PROPERTY CORNER
103	10332.6412	14551.6791	EXISTING PROPERTY CORNER
104	8382.0912	9334.6960	EXISTING PROPERTY CORNER
105	6562.4043	9503.5033	EXISTING PROPERTY CORNER
106	6497.7449	8806.4960	EXISTING PROPERTY CORNER
107	7395.7292	8723.1925	EXISTING PROPERTY CORNER
109	10005.3843	8481.1021	EXISTING PROPERTY CORNER
110	10002.9296	9184.2979	EXISTING PROPERTY CORNER
111	9104.3877	9267.6531	EXISTING PROPERTY CORNER
115	9696.6268	11597.7670	EXISTING AIRPORT REFERENCE POINT
118	10469.4855	11596.2598	THRESHOLD RUNWAY 20 - ULTIMATE
119	6226.3055	9145.6632	THRESHOLD RUNWAY 2 - ULTIMATE
120	9347.8955	10370.9615	RUNWAY 2-20 MIDPOINT - ULTIMATE
121	9970.0271	12296.1596	RUNWAY 6-24 MIDPOINT - ULTIMATE
122	9158.9613	11333.5606	ULTIMATE AIRPORT REFERENCE POINT (ARP)
200	8850.3739	8588.2492	ON EXISTING PROPERTY LINE
201	8530.1189	8617.9584	RUNWAY 6-24/PROPERTY LINE INTERSECTION
213	8858.1993	9456.0295	THRESHOLD RUNWAY 6 - EXISTING
214	10535.0543	13739.5044	THRESHOLD RUNWAY 24 - EXISTING
216	9470.0827	11013.0669	INTERSECTION OF RUNWAYS 6-24 AND 2-20
217	11081.8549	15136.2897	THRESHOLD RUNWAY 24 - ULTIMATE
300	10005.3065	8383.2487	U.S. HIGHWAY 80 CL STA 224+07.58
301	6522.3411	8708.6189	U.S. HIGHWAY 80 CL STA 259+05.71
309	8493.5233	8524.4758	RUNWAY 6-24/U.S. HIGHWAY 80 CL INTERSECTION

LEGEND	
1 BM	INDICATES EXISTING BENCH MARK LOCATION (SEE VERTICAL CONTROL TABLE)
106	INDICATES HORIZONTAL CONTROL POINT (SEE HORIZONTAL CONTROL TABLE)
(R)	INDICATES RECORD BEARING AND DISTANCE FROM "CONSTRUCTION PLANS FOR TOMBSTONE MUNICIPAL AIRPORT", DATED MARCH 12, 1948, BY HEADMAN, FERGUSON & CAROLLO.
(S)	INDICATES "AS-STAKED" RECORD BEARING AND/OR DISTANCE FROM "TOMBSTONE MUNICIPAL AIRPORT FENCING, GRADING & DRAINAGE IMPROVEMENTS" PLANS AND FIELD NOTES, DATED JUNE 6, 1991, BY GANNETT FLEMING, INC.
(C)	INDICATES CALCULATED BEARING AND/OR DISTANCE (DISTANCES AND BEARINGS WITH NO "C" OR "R" DESIGNATION ARE ALSO CALCULATED)
---	INDICATES EXISTING AIRPORT PROPERTY LINE
---	INDICATES ULTIMATE MINIMUM LAND ACQUISITION LINE (ULTIMATE PROPERTY LINE)

NOTES	
1	THE ULTIMATE PROPERTY LINE SHOWN REPRESENTS THE MINIMUM LAND REQUIREMENTS TO ENCOMPASS THE ULTIMATE RUNWAY PROTECTION ZONES, RUNWAY VISIBILITY ZONE, AND F.A.R. PART 77 TRANSITIONAL SURFACES TO A HEIGHT OF 35'.
2	THE ARIZONA STATE LAND DEPARTMENT REQUIRES THAT ALL EXISTING STATE TRUST LAND BE ACQUIRED IN FEE RATHER THAN AS EASEMENTS.



